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(54) SYSTEM FOR INDICATING THE DIRECTION OF OPENING OF A DOOR

(57) The invention relates to a device for indicating the direction of opening of doors using color codes based on the colors red and green. The color red is used to signal that the door, if it has leaves should be pulled, whilst if it is a sliding door or a door with automatically opening leaves, it indicates that the proximity sensor is on the other side from the user, and therefore will not open on the user's side. The color green indicates that the direction of opening is in the direction of forward movement, i.e. a door consisting of leaves should be pushed, whilst an automatic door, sliding, or leaf-type door will open, in accordance with the proximity of a person, on the same side as that from which that person is approaching. Thus, the user anticipates the functioning of series of doors, and the invention achieves a significant time-savings for persons as they pass through doorways, prevents accidents and overcomes the language barrier by using colors to indicate the way in which the doors operate.

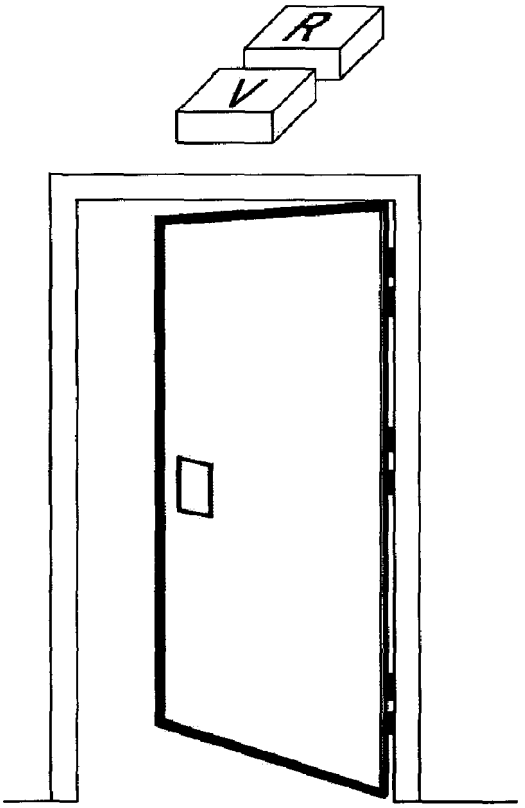

FIG. 5a

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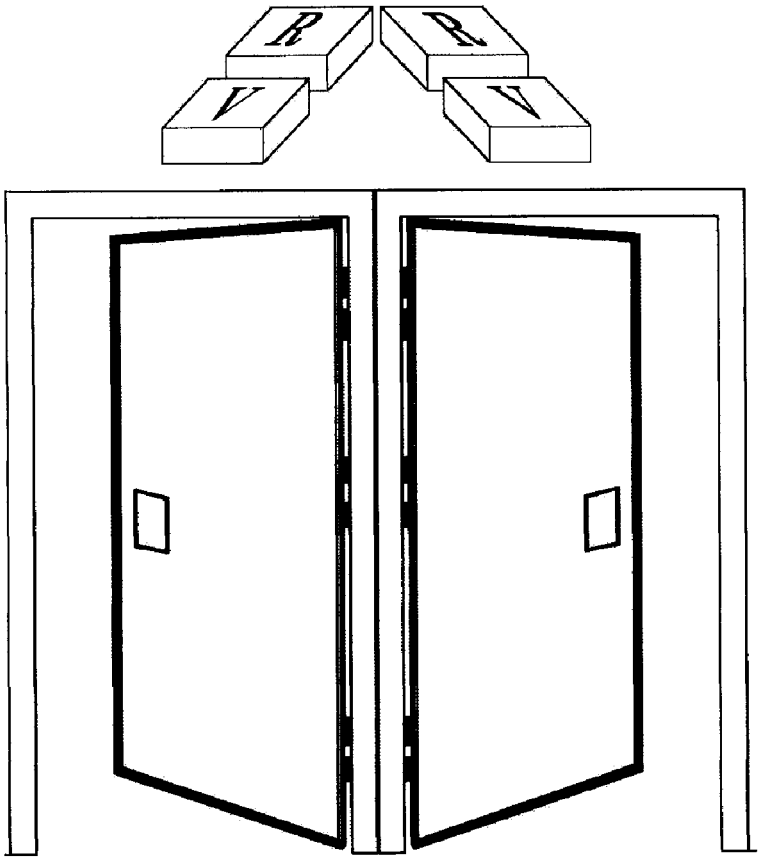

FIG. 5b

Description

FIELD OF THE INVENTION

[0001] The present disclosure relates to the field of signposting for people's transit, more specifically to a door opening direction's indicator for the arrangement of people's entrance through them, by means of a color code.

PREVIOUS ART DESCRIPTION

[0002] Today, signposting has become essential for the behavior and operation of various systems that are often around us and this signing must be above the understanding of a language. It is with that in mind that many signaling devices use drawings to show escape routes in buildings such as hotels, airports, cinemas, malls, etc. or other emergency and/or warning and/or information symbols.

[0003] The symbol or figure language has a universal understanding, which is why it is widely used around the world.

[0004] Another form of worldwide language is the information that can be given by using determined colors, associated or not with lights, and it is widely used on road signposts such as stoplights. In fact, the colors used for that have been standardized: For example, red for stopping or danger (forbidden) and green for passing o free (allowed).

[0005] An example of the latter can be found on the patent Document WO 01/71101, titled "Boarding hall call registration methods and its device" (Yoshida and others), which describes an access hall for a series of elevators, where there is a number and color indicator panel for each elevator, wherein each elevator also has its number and color laid out on top of its doors. The indicator panel provides buttons that can be lit up for each elevator and next to each button an assigned sector's indicator light. When a passenger wants to go to a floor on sector 1, he presses the button that corresponds to the sector, which is identified and transmitted to a sector indication's control. When the sector entry is registered, the pressed button lights up. When an elevator is assigned to sector 1, and indicator corresponding to sector 1 lights up and simultaneously the indicator on top of the elevator's door also lights up.

[0006] For the particular case of doors, and giving information respecting the opening direction of them in the case of swinging doors, it is used a sign at a medium height with a word in one language or at most in two languages, that indicates whether one has to pull or push for opening said door, which is comprehensible for people that know the language in question.

[0007] The same happens for automatic swinging or sliding doors that use signs with words such as "entrance" or "exit", because they have a proximity sensor on only side for operating the door.

[0008] In the previous cases the supplied information is not of use for everyone that needs to transit through the doors, for example, for those that do not know the language.

[0009] Because of the aforementioned, a door opening direction's indicator is provided for an arrangement in advance of people's entrance through them, by means of a Color code, using the colors red and green, widely known in the world, which indicate in a quick and precise manner the transit through them.

BACKGROUND OF THE INVENTION

[0010] The development of the present invention was born upon observing the inefficiencies of people's transit through doors, when realizing the existence of signaling that does not supply the necessary information for a safe and fluid transit through the doors, we refer to the signposts that indicate the following texts: "tire - empuje / push - pull".

[0011] Otherwise, there is no globally accepted and acknowledged signaling with added value thanks to its uniformity.

[0012] The signaling that is used nowadays has serious limitations that reduce its efficiency; some of them are among the following:

- The text "Push" indicated on the doors does not allow informing if these doors can be pushed by those who use the door on the opposite direction, a situation that carries a risk of accident for who tries to operate the door in opposite direction within little gap of time. The described situation means that the current signaling can not inform when a door operates in both ways with a 180° swing.
- The current signaling does not incorporate among its codes the possibility of informing when a door is blocked. This case is recurrently found in doors positioned one after the other with the goal of avoiding the heat or air conditioning from escaping the place. The presence of blocked doors without information related to its way of operating results in constant tries of people trying to open them, that produces discomfort and inefficiencies which are expressed in net time losses, losses that measured in global terms mean, surely, thousands of hour/man/year, economically quantifiable. To the cost previously described must be added the costs of accidents that are caused by a seriously limited signaling.
- When the doors have a sign with the word "Pull" on it, it is not possible to determine if those that open it from the opposite direction can only push it or pull it, this last situation being a door with a 180° swing.
- The current signaling and signposts are not able to deliver a 100% of the necessary information to make a safe and fluid passage through the doors, since it is not among its codes to signal how the doors are operated from the opposite direction that they are

being used.

- The current signaling imposes language barriers that if added to the previously described deficiencies make it a product undervalued by the global community.

[0013] The present disclosure is born from the search for a logical formulation that allows conceiving a practical application that overcomes the detected deficiencies.

[0014] A patent documents search was performed on the main world's databases like the EP (European Patent Office), US (United States Patent and Trademark Office) and DPI (Industrial Property Department in Chile), said search meant the analysis of more than 1000 documents and no patents similar to what is being developed here were found.

[0015] One of the main virtues of the developed device, relates to the anticipated delivery (at a minimum distance of approximately 4 to 5 meters before contacting the doors) of a 100% of the information needed to know the full operation of the doors, from the direction in which they are being approached, but also from the perspective of the people facing them from the opposite direction. The aforementioned means that the device gives information both about what the door can do from the direction that it is being approached, and simultaneously is able to supply information pertaining to the way these doors can be operated by those that approach them from the opposite direction, significantly exceeding the usefulness of the current device known for the signs "push / pull" or "tire / empuje".

[0016] What was just mentioned allows for reducing in a substantial way the risks of accidents caused by the lack of information, and enhancing the average speed for making a safe and fluid passage through these doors.

[0017] An obvious advantage of the disclosure corresponds to the important time saving that is achieved by people as they pass through the doors, by avoiding the current inefficiencies caused by an inadequate or non-existent signaling.

[0018] Globally the time savings expressed in hours/man/year can amount to substantial economical resources.

BRIEF DESCRIPTION OF THE FIGURES

[0019]

Figure 1 shows a top view of four doors with a first color code modality.

Figure 2 shows a top view of the opening of the doors according to Figure 1.

Figure 3 shows a top view of four doors with a second color code modality.

Figure 4 shows a top view of the opening of the doors according to Figure 3.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0020] The present disclosure provides a general door opening direction's indicator, of manual swinging doors using a color code based on the red color and the green color.

[0021] Its design corresponds to a card that must be installed on each door on both sides, in the superior and opposite to the hinges part of the door, this design has two opposing arrows drawn in three dimensions, disposed in such way that the first arrow, if the door can only be pushed, must be green, and the second arrow red and if the door can only be pulled for its opening, the first arrow must be red and the second arrow must be green colored, the next two options correspond to blocked doors, in which case both arrows color must be red, on the other hand if the door operates in both ways (180° swinging doors), the first and second arrows color must be green, (see drawings).

[0022] In this way the user anticipates the working of a series of doors that are in sequence, as always happens in places that double doors are needed for a more suitable thermal insulation, e. i., places where is needed to maintain a temperature, for example to make the air conditioning, or heating, more efficient in a place in comparison to the exterior.

[0023] Another advantage of this disclosure is that it avoids displeasure and bad humor to the people that to make their way through the doors chose doors that are currently blocked, because the current devices "push - pull" are not able to inform of this situation. The invention that has been developed allows avoiding accidents that many times can be really serious.

[0024] As it was mentioned before, the indicator according to the present invention breaks the language barrier by using colors to indicate the way that the doors operate, and it might have an easy to understand global application.

[0025] The way to implement the door opening indicator is through a card with 2 arrows which are drawn three-dimensionally, placed in the upper part of the doors, on the side opposite to its support (the hinges), that show the doors operation from the front side and the reverse side, being the lower arrow the one that indicates the doors operation from the front and the upper arrow the one that indicates the doors operation from behind. The aforementioned is well explained by Figures 1 and 3 showing the code for a door that comprises two colors, one for the front and one from the back of the door, wherein "R" means red and "V" means green, in the Figures.

[0026] Another embodiment of the invention provides a flat sign in an indicator's perspective view as it is shown by Figure 5a for one door or Figure 5b for two doors, where it is clear that the perspective is from the front to the back of the door.

[0027] In another embodiment of the invention, the door opening indicator is an illuminated device of the re-

specting color, wherein a luminous source of the color is placed on top of the door at both sides of it.

[0028] In another embodiment of the invention, the indicator is a panel in which the color arrangement for the doors is provided through luminous sources. The next table shows a list of possible ways for functioning of two doors standing one next to the other.

TABLE: Color code list for different ways of operation in the opening of doors.

	LEFT DOOR	RIGHT DOOR
1	R	R
	V	V
2	V	V
	R	R
3	R	V
	R	V
4	V	R
	V	R
5	R	V
	V	R
6	V	R
	R	V
7	R	V
	R	R
8	R	R
	R	V
9	R	R
	V	R
10	V	R
	R	R
11	V	R
	V	V
12	V	V
	V	R
13	R	V
	V	V
14	V	V
	R	V

EXAMPLE OF AN APPLICATION

[0029] An example of an application is shown on Figure 1, wherein the door opening indicator has a configuration allowing the opening of the doors as presented in Figure 2. Meanwhile another application example is shown in Figure 3 in which two of its four doors allow for opening the doors in both directions, as it is shown in Figure 4.

Claims

1. A door opening indicator device, **characterized by** comprising a sign that uses a color code based on the color red and the color green for the arrangement in advance of people's entrance through them.
2. The door opening indicator device according to claim 1, **characterized in that** the background's color is metallic grey.
3. The door opening indicator device according to claim 1, **characterized in that** said sign is presented in a three-dimensional way.
4. The door opening indicator device according to claim 1, **characterized in that** said sign is provided on each side of the doors.
5. The door opening indicator device according to claim 1, **characterized in that** the doors are manual doors.
6. The door opening indicator device according to claim 1, **characterized in that** the doors are swing doors.
7. The door opening indicator device according to claim 1, **characterized in that** said color red indicates that one has to pull the door.
8. The door opening indicator device according to claim 1, **characterized in that** said color green indicates pushing the door.
9. The door opening indicator device according to claim 1, **characterized in that** said red color indicates that the door is an exit door.
10. The door opening indicator device according to claim 1, **characterized in that** said color green indicates that the door is an entrance door.

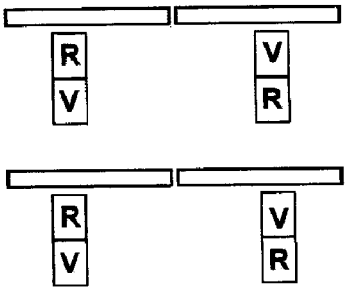

FIG. 1

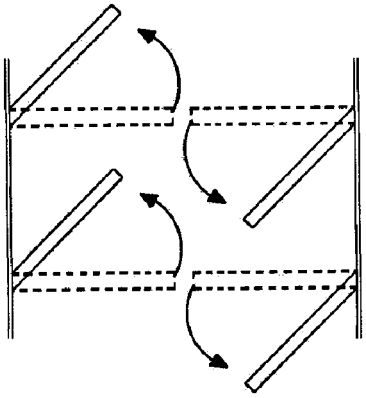

FIG. 2

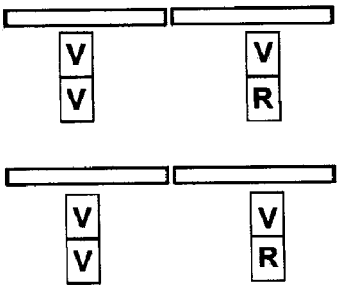

FIG. 3

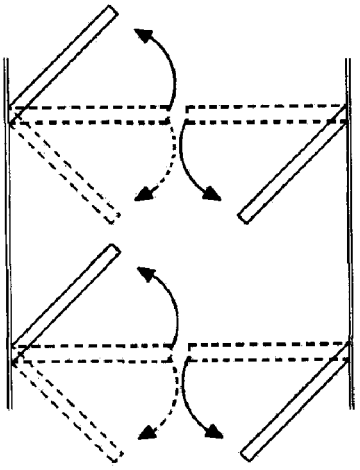

FIG. 4

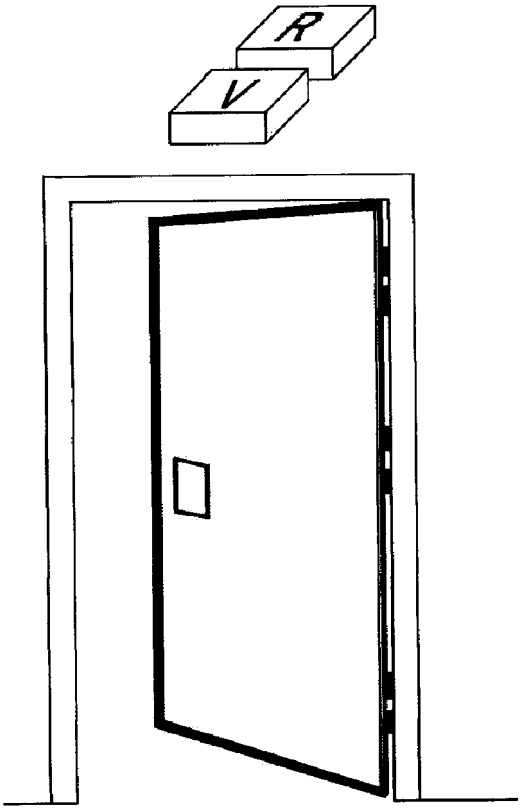

FIG. 5a

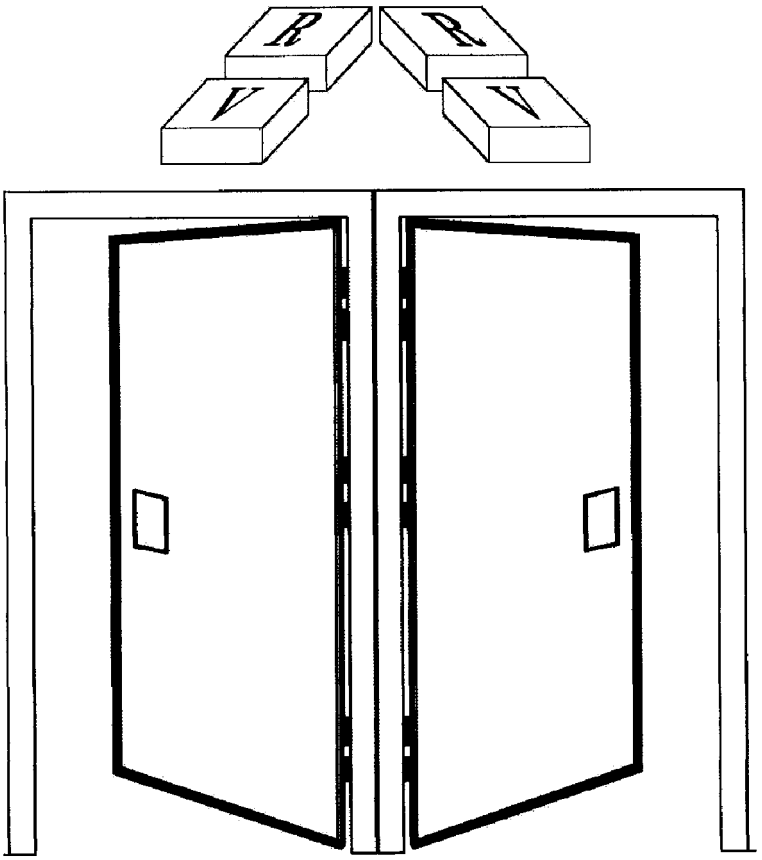

FIG. 5b

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 2007/070073

A. CLASSIFICATION OF SUBJECT MATTER

G09F 7/00 (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CIBEPAT, EPODOC, DWPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4481887 A (URBANO, E.) 13.11.1984, column 3, lines 3-64; figure 2.	1,4-6,9,10
A	DE 3644064 A1 (KUKLA, D. et al) 16.06.1988, the whole document.	1,7,8
A	DE 10032629 A1 (DORMA GMBH) 31.01.2002, paragraphs [14-24]; figures.	1-5
A	DE 19747660 A1 (BAILEY, T.) 06.05.1999,	

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance.
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"P" document published prior to the international filing date but later than the priority date claimed
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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents , such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23.August.2007 (23.08.2007)	(27/08/2007)
Name and mailing address of the ISA/ O.E.P.M. Paseo de la Castellana, 75 28071 Madrid, España. Facsimile No. 34 91 3495304	Authorized officer A. López Alonso Telephone No. +34 91 349 84 21

Form PCT/ISA/210 (second sheet) (April 2007)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/ ES 2007/070073

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
US4481887 7 A	13.11.1984	NONE	----------
DE3644064 4 A	16.06.1988	NONE	----------
DE10032629 9 A	31.01.2002	NONE	----------
DE19747660 0 A	06.05.1999	NONE	----------

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 0171101 A **[0005]**